DIRECT TESTIMONY OF

TYLER H. NORRIS

ON BEHALF OF THE

SOUTH CAROLINA SOLAR BUSINESS ALLIANCE, INC.

BEFORE THE

PUBLIC SERVICE COMMISSION

OF SOUTH CAROLINA

DOCKET NO. 2019-2-E

Annual Review of Base Rates for Fuel Costs for

South Carolina Electric & Gas Company

I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q. Please state your name and business address.

A. My name is Tyler H. Norris, and my business address is 5310 South Alston Avenue, Building 300, Durham, North Carolina 27713.

Q. Please describe your educational background.

A. I graduated with distinction from Stanford University in Palo Alto, CA with a Bachelor of Arts in Public Policy, where I received the Harry S. Truman Scholarship.

Q. Please describe your professional experience.

A. I currently serve as Board Director of Regulatory Affairs for the South Carolina Solar Business Alliance, Inc. (SCSBA), the state's primary and most active solar industry association, which was founded in 2009 and today represents over 30 solar companies before this Commission and the state legislature. I also serve on the Board of Directors of the North Carolina Clean Energy Business Alliance, NC's largest trade association for clean energy businesses. I am here today representing SCSBA's membership at large, including my employer, Cypress Creek Renewables, LLC, where I manage commercial and policy strategy for the Southeast. I previously served as Director at S&P Global Platts, where I led the firm's U.S. renewable power and storage market analysis, and I previously served as Special Advisor at the U.S. Department of Energy in Washington, DC, including roles in the Office of the Secretary of Energy and the Office of Energy Efficiency and Renewable Energy.

Q. Please provide more background on your employer.

A. Cypress Creek Renewables has grown to be one of the most active solar and solar-plus-storage development firms in the United States. Cypress Creek has developed 3.3 GW of solar projects to date, with a majority in the Carolinas, of which we own and operate over 1.0 GW. Cypress Creek has developed over 20 currently operational projects in South Carolina totaling nearly 300 MW, with hundreds of additional megawatts under development. In 2018, Cypress Creek was recognized by Solar Power World Magazine as the top independent utility-scale solar developer in the country.

Q. What is the purpose of your testimony?

A. First and foremost, the purpose of my testimony is to explain how SCE&G's proposed "Variable Integration Charge" (VIC) would inflict immediate and severe commercial consequences on independent power producers and create a highly disruptive change to the business and regulatory environment for South Carolina's renewable power industry. In addition, I will summarize SCSBA's concerns with SCE&G's proposed avoided cost proposal and the relevant implications of the South Carolina Energy Freedom Act (H.3659) currently under consideration by the South Carolina Legislature.

II. CONCERNS WITH SCE&G'S PROPOSED VARIABLE INTEGRATION CHARGE

Q. Please briefly describe SCE&G's proposed Variable Integration Charge.

A. SCE&G is proposing to impose a VIC on a significant portion of solar facilities that are already operational, under construction, or entering the construction phase, as well as on all future solar facilities, based on the alleged impacts of "intermittent solar" on SCE&G's system. According to SCE&G, these impacts require SCE&G to "maintain

additional reserves, forcing it to operate its plants at less than the most efficient levels for which they were designed." Raftery Direct Testim. at 13:5-15. The charge proposed by SCE&G is $3.96/MWh, allegedly corresponding to "the levelized cost of maintaining additional operating reserves" in one of the projected cases.

Q. Is this fuel proceeding the appropriate docket for evaluating SCE&G's proposed Variable Integration Charge, in the view of SCSBA?

A. No. Any Commission decision on the VIC is likely to be superseded by events expected or known to be happening later in 2019. First, legislation recently passed by the S.C. House and pending in the Senate (H.3659) would require the Commission to conduct another avoided cost proceeding in 2019 and would authorize this Commission to initiate an independent study assessing the factors on which the VIC is based. Second, SCE&G has already committed to propose new avoided cost rates as part of a Settlement Agreement filed with the Commission in Docket No. 2017-370-E in November 2018, whereby this Commission and intervening parties would have the benefit of considering SCE&G's VIC in a proceeding focused exclusively on the details of avoided cost methodologies and rate making. Third, as part of that Settlement Agreement, SCE&G committed to a stakeholder process to develop consensus curtailment protocols and other proposed policies that will have a material impact on the circumstances relevant to the VIC, a stakeholder process which is currently underway.

In addition, since June 2018 SCE&G (with the assistance of ICF International and Opinion Dynamics Corporation) has been conducting a study of the potential for expanded use of demand side management programs on its system, in response to the Commission's directive (in Order No. 2018-322(A)) to "…investigate and implement

economic demand side management and energy efficiency programs with an emphasis on decreasing the newly developed winter peak." SCE&G plans to present the results of that study to the SCE&G Energy Efficiency Advisory Group by the end of June 2019. Because that study is still ongoing, SCE&G's VIC study did not consider the possibility that demand response programs could be used to fulfill some of its supposed reserve margin requirements. Because the results of that study could have a very significant impact on SCE&G's assessment of integration charges, it would not be appropriate for this Commission to make a determination as to the VIC at this hearing.

Q. Does SCSBA have reason to conclude that SCE&G's proposed Variable Integration Charge is inaccurate?

A. Yes. SCSBA attests that SCE&G's assumptions on the volume of future solar installations on its system are unrealistic. The reason for this is straightforward: although SCE&G assumes that all existing solar projects that have executed PPAs with SCE&G will be constructed and become operational for purposes of calculating the VIC, our business members have confirmed that the imposition of such a large VIC will render at least 100 MW of large, transmission-scale projects financially non-viable and require the termination of their PPA. The ultimate number of PPA terminations could be considerably higher. In other words, if SCE&G's proposed VIC is approved, it will prevent the development of a substantial portion of the solar facilities that SCE&G assumes will be installed on its system over the next two years. This fact alone suggests that SCE&G's proposed VIC is excessive and inaccurate as applied to currently operating projects and some portion of planned projects, since SCE&G's calculation methodology assumes that the VIC should increase as the total capacity of installed solar grows. It

further demonstrates that SCE&G's reliance on an uncertain forecast of future solar installations, as opposed to an estimate of the specific operational costs associated with each additional installation, represents a fundamentally problematic methodology for calculating the VIC that is inherently prone to inaccuracy and results in discriminatory treatment of qualifying facilities (QFs).

Q. **Is SCSBA aware of any similar variable integration charges imposed by other utilities in the region?**

A. No. SCSBA is not aware of any proposal by any other electrical utility in the region that would impose a VIC retroactively to existing operating facilities or projects with executed PPAs that are currently under construction or entering the construction phase. In this respect, SCE&G's proposed charge would be uniquely punitive and disruptive to existing independent power assets and planned asset investments and is unprecedented in the Southeast. SCSBA is aware of a new "integration services charge" proposed by Duke Energy Carolinas (DEC) and Duke Energy Progress (DEP) in Docket No. 1995-1192-E before this Commission, and in Docket No. E-100 Sub 158 before the North Carolina Utilities Commission. However, Duke's proposed charge would only apply to future PPAs, and would be limited to $1.10/MWh for DEC and $2.39/MWh for DEP. In any event, Duke's proposal has not been approved by this Commission or by the North Carolina Utilities Commission and is currently undergoing rigorous scrutiny in open regulatory proceedings focused solely on avoided cost related matters.

Q. If the proposed Variable Integration Charge is approved, how would it impact independent power producers in SCE&G territory?

A. If approved, SCE&G's proposed VIC would have direct and severe commercial consequences for independent power producers, up to and including a complete halt to independent solar development in SCE&G's territory.

The first and most disruptive consequence would be to force independent power producers to terminate the development of some solar projects currently under construction or planning to enter construction in the near future, by reducing projected revenues over the life of their PPAs by approximately 10 percent. The commercial implications of a 10 percent revenue reduction on such a project would be devastating: an independent developer generally must provide 100% of the capital required for a utility-scale solar facility (which can be up to $100 million for a larger QF) up front, assuming all risks associated with construction cost overruns and delays. The developer recovers that investment over the lifetime of the project via sales under the PPA, but the vast majority of that revenue goes to pay back the up-front capital cost of the system. The developer's margin, which is what remains (minus taxes, site control costs, and other ongoing costs), seldom exceeds 10 percent and is further exposed to long-term risk factors, namely post-contract power prices. So the proposed VIC would not just wipe out the developer's and investors' potential margins – it would most likely render the net present value of those projects negative. As such, those independent power producers could be forced to cancel those projects and write off all expenditures on the projects to date, resulting in substantial losses, which can range into the tens of millions of dollars for a project under construction. Beyond the financial impact on those independent power

producers, the termination of those projects would eliminate hundreds of existing or planned construction jobs and deprive the surrounding counties of the property tax revenues or fees that would have been generated by those projects.

The proposed VIC would also impose significant commercial consequences on the owners of existing, operating solar facilities in SCE&G territory. The VIC would eliminate up to eight percent of all revenue for those operating facilities, making them wholly unprofitable and imposing losses on their owners, as well as reducing certain tax revenues generated by those facilities. While it is unlikely that would result in shut down of already-built facilities, the owners of those facilities would be forced to write off those losses and in some cases might have to sell those facilities at a loss.

A third type of commercial consequence would be felt on the developers of early-stage solar sites in SCE&G territory. On top of the large reduction in the avoided cost rate proposed by SCE&G, the VIC would reduce the potential revenue for new solar QFs by nearly 20% over the next five-year period. SCSBA anticipates that such a VIC would halt the development of any new solar QFs, putting a definitive end to utility-scale solar development in SCE&G territory outside of utility self-build projects.

Q. What implications does the proposed Variable Integration Charge carry for South Carolina's broader business environment?

A. Based on publicly available data from the South Carolina Department of Commerce, since 2015 nearly $2 billion of new capital investment has been scheduled for large-scale solar facilities across 19 different counties in South Carolina. This investment generates tens of millions of dollars in local property tax revenue, state income tax

revenue, unemployment tax revenue, and other tax and non-tax related benefits. Investments like these not only are a boon for the local tax base, but also help create a growing workforce throughout the state. According to *SC Biz News*, three of the SCSBA's member companies placed in the top ten of the fastest growing companies in South Carolina: Southern Current, #1 in the Large Business category; Hannah Solar Government Services, #2 in the Small Business category; and Alder Energy, #7 in the Small Business category.

The proposed VIC would represent a highly disruptive change to the business and regulatory environment for independent power producers in South Carolina. As explained above, the VIC would impose major losses on independent power producers with projects under construction, entering the construction phase, and that are currently operational. These losses would be the direct result of a wholly unexpected and unnecessary change in the state's regulatory environment via the imposition of a charge which (1) represents a fundamentally new concept for the state's electrical power industry; (2) was developed by SCE&G without forewarning to independent power producers and without engagement of ORS, the Commission, market participants, or other independent experts; (3) is inappropriately included in a broader, standard proceeding with a compressed timeline and little opportunity for evaluation, and while the state legislature is actively considering legislation that directly implicates the regulatory matters in question; and (4) contains numerous and readily identifiable methodological flaws. If such a proposal were to be approved despite these extraordinary circumstances, it is SCSBA's view that it would have an immediate chilling effect on private investment in South Carolina's

energy sector and that business confidence in the state's broader independent power industry would erode.

Q. Is imposition of the Variable Integration Charge consistent with other developments in the renewable energy market in South Carolina?

A. No. The South Carolina Office of Regulatory Staff recently submitted a report to the S.C. Public Utility Review Committee titled *Discussion of South Carolina Act 236: Version 2.0*, which contains a section on commercial and industrial renewable energy programs (Chapter 6). The report notes that "These larger customers are increasingly demanding choices better suited to meeting their energy and sustainability goals, and utilities across the country are responding with a variety of programs, commonly referred to as Green Tariffs."[1] This increasing demand for clean energy is also reflected in the Corporate Renewable Energy Buyers' Principles, which includes 78 corporate signatories with a combined market capitalization of $7.8 trillion and that represent over 69 million MWh of demand for renewable energy by 2020. The principles adopted by these corporations include greater choice in procurement and cost competitive options; an ability to lock in energy price certainty and avoid fuel price volatility; and increased access to standardized and simplified processes, contracts, and financing for renewable projects.[2]

Section 58-41-30 of H.3659 would require SCE&G to file a renewable energy program designed to meet this type of commercial and industrial clean energy demand.

[1] *Discussion of South Carolina Act 236: Version 2.0*, December 2018, Energy and Environmental Economics, Inc. at 40

[2] *See* Corporate Renewable Energy Buyers' Principles; https://buyersprinciples.org/

However, the proposed VIC combined with SCE&G's proposed avoided cost rates would make any renewable energy program designed to benefit commercial and industrial customers infeasible.

III. AVOIDED COST: CONSIDERATIONS FOR INDEPENDENT POWER PRODUCERS AND RATEPAYERS

Q. SCSBA forcefully disputed SCE&G's proposed avoided cost rates and methodologies in the prior PR-2 proceeding (Docket No. 2018-2-E). Has SCE&G sufficiently addressed those concerns in this Docket?

A. No. Unfortunately, SCE&G's proposed avoided cost methodology in this docket continues to suffer from fundamental methodological flaws, many of which were identified in the extensive expert testimony of Dr. Ben Johnson submitted on behalf of SCSBA in the 2018 SCE&G fuel proceeding.[3] Although the Commission approved SCE&G's proposed rates in Order No. 2018-322(A), that Order is currently being appealed to the South Carolina Supreme Court not only by SCSBA but also by the South Carolina Coastal Conservation League ("CCL") and the Southern Alliance for Clean Energy ("SACE").[4] *South Carolina Coastal Conservation League et al. v. South Carolina Public Service Commission, Carolina et al.*, Appellate Case No. 2018-001165.

[3] Docket No. 2018-E-2, *Corrected Direct Testimony Of Dr. Ben Johnson On Behalf Of The South Carolina Solar Business Alliance* (Apr. 17, 2018); *Corrected Surrebuttal Testimony Of Dr. Ben Johnson On Behalf Of The South Carolina Solar Business Alliance* (Apr. 17, 2018), both available online at https://dms.psc.sc.gov/Attachments/Matter/f11f3344-fcb2-497f-b455-e3490f5119b2.

[4] SACE and CCL's appeal challenges the technical reasonableness of SCE&G's proposed avoided cost methodologies and rates. The central issue raised by SCSBA on appeal is whether the Commission inappropriately imposed on intervenors a the burden of proving that some other alternative rate was reasonable and prudent, rather than requiring SCE&G to prove that its rates were reasonable, as required under the burden shifting scheme established by the South Carolina Supreme Court in *Hamm v. South Carolina Public Service Commission*, 309 S.C. 282, 422 S.E. 2d 110 (1992).

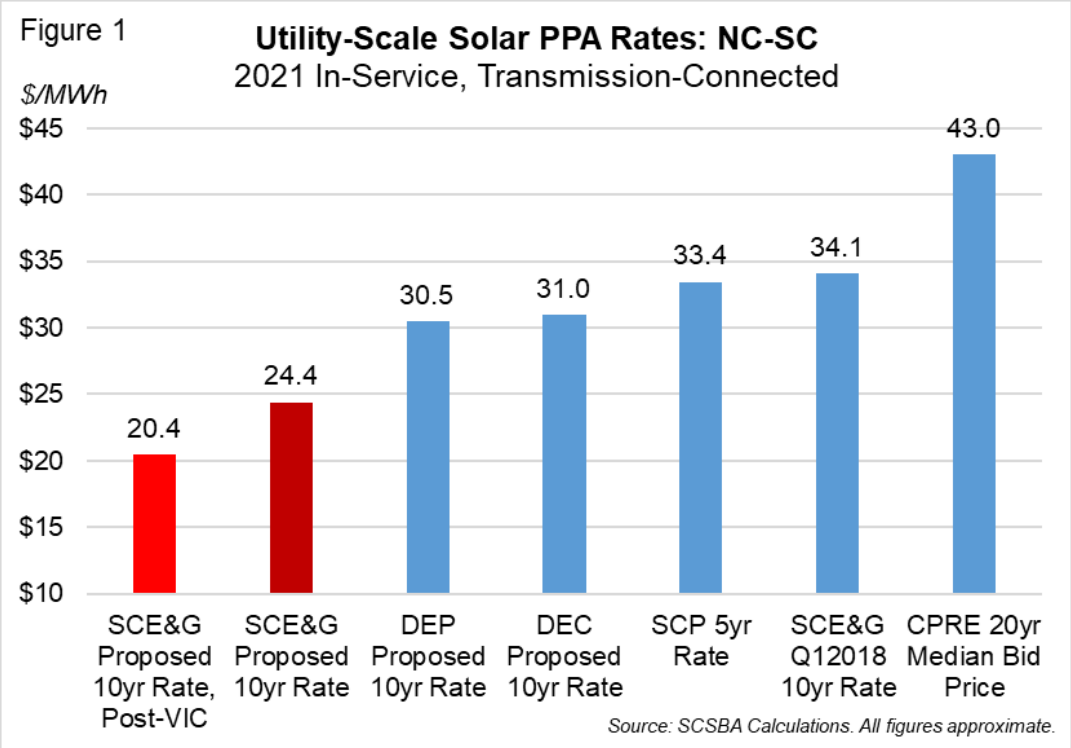
Other intervenors in this proceeding are providing testimony regarding the technical deficiencies in SCE&G's avoided cost calculations. It is SCSBA's view that these matters deserve a substantially more thorough and dedicated avoided cost proceeding, including a qualified independent third party employed by the Commission for the express purpose of evaluating SCE&G's proposed methodology, rates, calculations, and terms.

Q. Besides its technical deficiencies, is there reason to conclude that SCE&G's proposed avoided cost rate is artificially low?

A. Yes. SCE&G's newly proposed avoided cost rate is an energy-only rate providing less than $24/MWh over ten years for solar QFs entering service in 2019 or 2020, and less than $26/MWh for any QFs entering service between 2021 and 2024 — even before the imposition of a $4/MWh VIC. Such a rate is 30% lower than SCE&G's avoided cost rate of $34/MWh as recently as one year ago, and it is 45% lower than the approximately $43/MWh median bid price for 20-year PPAs under the recent Competitive Procurement for Renewable Energy ("CPRE") Tranche One, which was open to bids from utility-scale solar projects in South Carolina's DEC and DEP service territories. By statute, bids in the CPRE program are *capped* at DEC and DEP's avoided cost. So CPRE bid prices fall somewhere between avoided cost and developers' estimates of minimum financeable PPA rates.

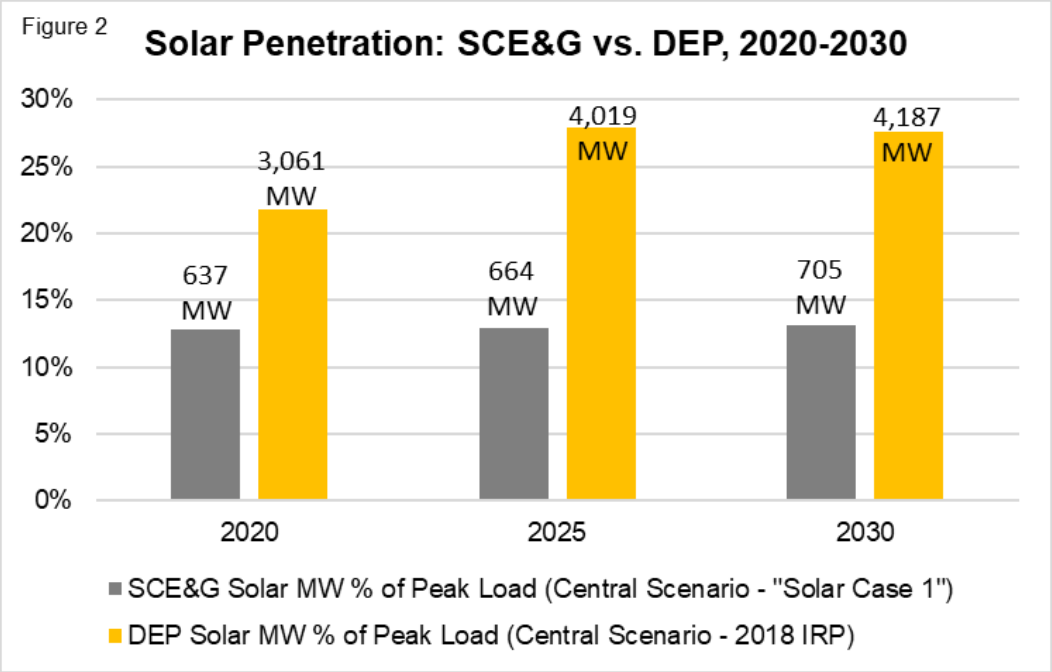
In short, it is not an exaggeration to say that SCE&G's new rate is wholly unfinanceable for any solar developer in the region, and its implementation would halt further development of independent, utility-scale solar in SCE&G territory.

Figure 1



Such an extremely low rate is an outlier in the Carolinas (See Figure 1 above). A useful point of comparison is DEP, which according to its own 2018 Integrated Resource Plan (IRP) filed with this Commission (in Docket No. 2018-8-E) will have 2,750 MWac of operating solar capacity on its system by the end of 2019, representing 20% of its peak load. DEP anticipates 4,000 MWac of operating solar capacity by 2025, or 28% of its projected peak load in that year (See Figure 2 below). Yet DEP's newly proposed 10-year avoided cost rate for standard offer QFs still assigns capacity value to solar QFs, with a blended rate of approximately $31/MWh and a proposed "integration services charge" of $2.39/MWh. This is despite DEP's relatively high solar penetration rate, its "winter-peaking" capacity allocation (the same as SCE&G), and the fact that DEP did not recently abandon a large-scale nuclear power plant, as SCE&G did – a development which presumably would result in new capacity needs.

Figure 2



Yet SCE&G's avoided cost methodology assigns zero capacity value to solar resources. Indeed, SCE&G does not even attempt to calculate avoided capacity rates. It simply claims that because additional solar will not impact the utility's winter peak, solar has no capacity value at any time during the year. In other words, SCE&G is concluding on the front end that a solar resource cannot add or displace capacity at a value that would hold ratepayers neutral because solar does not impact SCE&G's winter peak. However, SCE&G readily admits that its winter peak forecast could "easily reverse" to a summer peak with only a "small change" in customer load characteristics. Lynch Direct Testim. at 11:11-22. Furthermore, capacity value is appropriately recognized not only at a few extreme peak hours per year, but also across a wider range of hours in which capacity is needed. SCE&G is also assuming that solar resources are incapable of providing capacity value on winter mornings, which is categorically false. For example, Cypress Creek's utility-scale solar-plus-battery projects on Brunswick EMC's system in

eastern North Carolina regularly produce output during winter mornings, enabling the EMC to significantly reduce its demand charges.

As stated above, it is not the intention of SCSBA to provide a thorough analysis of SCE&G's avoided cost calculations in this testimony. These are illustrative examples of how SCE&G's avoided cost methodology is flawed and results in artificially low rates, and why SCSBA believes a separate, dedicated avoided cost proceeding is necessary.

Q. Turning to more general considerations, what is the definition of "avoided cost" according to the Federal Energy Regulatory Commission (FERC)?

A. FERC defines avoided cost as "the incremental cost to an electric utility of electric energy or capacity which, but for the purchase from the QF, such utility would generate itself or purchase from another source."[5]

Q. How do customers benefit from a utility's purchase of output from a QF?

A. Customers can benefit with respect to the overall cost of utility service due to the downward rate pressure that is created by competition from independent power producers, particularly when QFs have access to long-term, fixed price PPA contract tenors. QFs can also provide a variety of other benefits to customers, including but not limited to diversification of the electricity supply mix, reduced dependence on volatile fuel prices, and promotion of clean electricity sources and the associated reduction of pollutants.

[5] https://www.ferc.gov/industries/electric/gen-info/qual-fac/benefits.asp

Q. Are lower avoided cost rates better for ratepayers?

A. Lower avoided cost rates do not necessarily translate into lower costs for ratepayers. Although avoided cost payments to QFs are included in "fuel costs related to purchased power" pursuant to S.C. Code Ann. Sec. 58-27-865, and thus passed on to ratepayers via the fuel proceeding, it is also the case that power purchases from QFs displace both fuel and capital costs that would otherwise be incurred by the utility and passed on to ratepayers. Accurate lower avoided cost calculations may legitimately reflect the fact that a utility is operating its system at lower costs to ratepayers, meaning that QFs must deliver energy and capacity at lower rates to be cost-neutral, as required by PURPA. But artificially low avoided cost rates can result in higher overall costs to ratepayers by under-incentivizing QF development, driving away competition and depriving customers of the downward price pressure that competition would otherwise place on rates.

Q. How do accurate avoided cost calculations place downward pressure on rates?

A. If a QF can be successfully financed, built and operated based on a utility's avoided costs, the utility is required to buy the QF's output and loses "market share" – that is, its ability to build and operate facilities itself to serve its captive customer base. To avoid this result, monopoly utilities who wish to retain "market share" must figure out how to innovate and operate more efficiently in order to drive their avoided costs down to the point where QFs are no longer viable. Thus, accurate avoided cost rates send a market signal that independent power producers must meet if they are to effectively compete with a utility's cost of delivering energy and capacity to customers. If avoided cost rates are set higher than the costs a utility would actually avoid by purchasing energy

and capacity from a QF, then QFs are over-incentivized and ratepayers will end up paying too much for their output. If avoided cost rates are set lower than the utility's actual avoided cost, then the utility is being artificially shielded from QF competition, which would otherwise serve to drive costs down over time for ratepayers. Therefore, accurate avoided cost calculations, rather than lower avoided cost calculations, are in the best interest of ratepayers.

Q. How can effective competition from independent power producers drive a utility's rates down over time?

A. Although SCE&G does not appear to mention the terms "shareholder" or "fiduciary duty" in any of its direct testimony on avoided cost, the Company nonetheless has a substantial interest in protecting its market share for the purpose of maximizing profits for the benefit of its parent company Dominion Energy's shareholders. By introducing effective competition from independent power producers into a vertically integrated electricity market, a monopoly utility is incentivized to keep its costs down in order to retain market share and out-compete would-be competitors like QFs. Over time, this competition for market share will result in lower prices for consumers. Thus, ratepayers will want avoided cost rates to be as accurate as possible so that they do not overpay for energy from QFs while also benefiting from the introduction of limited competition into vertically integrated monopoly utility energy markets.

It should be noted that effective, limited competition by independent power producers does not represent a threat to the financial integrity of investor owned utilities. The regulatory compact ensures that a monopoly utility will continue to make a return on prudent investments and maintain the revenue certainty necessary to serve its customers.

Q. What is "capital bias" and how does it affect a vertically integrated electrical utility's motivation to drive its avoided cost calculations as low as possible?

A. "Capital bias" is a side effect of the traditional cost of service rate making process typically used in vertically integrated energy markets, which explains much of the utility's potential bias towards critically low avoided cost rates. Capital bias refers to a utility's desire to deploy capital in a manner that increases profits for shareholders. When purchasing energy and capacity from a QF, those payments represent a pass-through cost for the utility on which it will not earn a return. Capital bias causes a utility to prefer building and owning new generation assets over purchasing energy and capacity from a third party. For example, capital bias might lead a utility like SCE&G, which operates an overwhelmingly summer peaking system, to prefer meeting its winter peaking needs by constructing a new natural gas facility rather than fully considering more targeted investments like solar plus storage or demand response.

IV. THE SOUTH CAROLINA ENERGY FREEDOM ACT (H.3659)

Q. Why is H.3659 relevant to this proceeding?

A. On February 21, 2019, the *South Carolina Energy Freedom Act* (H.3659) was passed unanimously (110-0) by the South Carolina House of Representatives (see, Exhibit THN-1).[6] This legislation is currently being considered by the Senate Judiciary Committee. The legislation has received broad stakeholder support, including that of SCE&G/Dominion Energy, which testified in favor of the legislation before a subcommittee convened by the House Committee on Labor, Commerce, and Industry.

[6] *South Carolina Energy Freedom Act*, H.3659, Session 123 (2019-2020).

H.3659 includes several provisions that are directly relevant to SCE&G's avoided cost methodology, "variable integration charges," and resource planning, including but not limited to the following:

1. Within six (6) months after the effective date of the legislation, the Commission will be required to open a docket for purposes of establishing and approving updated avoided cost rates and methodologies for each utility, in proceedings held separate from the utility's annual fuel docket (58-41-20(A)).
2. The Commission is authorized to independently employ third-party consultants and experts to carry out its duties, including, but not limited to, for the purpose of evaluating proposed rates, terms, calculations, and conditions under this section. And the Commission is required to engage a third party to submit a report that includes independently derived conclusions regarding each utility's calculation of avoided costs for purposes of these proceedings (58-41-20(H)).
3. The Commission, in coordination with the Office of Regulatory Staff, is authorized to initiate an independent study to evaluate the integration of renewable energy and emerging energy technologies into the electric grid for the public good. The integration study must evaluate what is required for electrical utilities to integrate increased levels of renewable energy and emerging technologies while maintaining economic, reliable, and safe operation of the electric grid (58-37-60(A)). This is precisely the set of issues that are implicated by the proposed VIC.

4. Utility integrated resource plans must be conducted consistent with an updated statutory framework that requires the utility to consider a number of factors not currently considered by the utilities in development of their IRPs. (58-37-40). Given that resource plans are a primary driver of avoided cost calculations, the development of H.3659-compliant IRPs will likely have a significant impact on the utilities' avoided cost calculations.

If H.3659 is passed by the Senate and signed into law, it will require the Commission to revisit all of the matters related to avoided cost issues and the VIC that are at issue in this docket, first within the next six months and then potentially again as the various provisions of the law are implemented.

Q. Are there other activities underway that could have a bearing on the issues involved in this proceeding?

A. Yes. In a Settlement Agreement filed with the Commission in Docket No. 2017-370-E in November, 2018, SCE&G agreed to several conditions on its proposed merger with Dominion related to utility-scale solar.[7] The Settlement Agreement obligates SCE&G to:

1. In calendar year 2019, propose for Commission approval avoided cost rates that provide accurate pricing for storage as a separate resource, or technology neutral avoided cost rates for energy and capacity that provide accurate pricing for dispatchable renewable generating facilities such as solar-plus-storage;

[7] South Carolina Electric & Gas, Dominion Energy, and South Carolina Solar Business Alliance Merger Settlement Agreement, Docket No. 2017-370-E (November 2018).

2. Participate in a stakeholder process (which is currently ongoing) to develop a fair, reasonable, and nondiscriminatory protocol for the curtailment of all legally dispatchable generating resources in circumstances where curtailment of solar resources is necessary due to system conditions on SCE&G's Transmission System or Distribution System, or otherwise required under the terms of those solar resources' interconnection agreements with SCE&G; and
3. Devise and propose modifications to SCE&G's interconnection procedures to expeditiously facilitate the addition of energy storage to solar projects currently in the interconnection queue and/or currently in operation, with the principal but nonexclusive goal of addressing operating conditions that may necessitate curtailment.

The outcome of that stakeholder process (i.e., a curtailment protocol and policy options for integrating storage to alleviate certain system issues) is likely to have a significant impact on the results of any VIC study.

Q. Does the SCSBA believe that avoided cost and VIC related matters can be better addressed in the merger settlement and legislative processes outlined above?

A. Yes. The SCSBA views regulatory matters such as avoided cost ratemaking and integrated resource planning as highly technical topics involving extensive data inputs, methodological considerations, and regulatory judgment to arrive at just and reasonable rates and an appropriate long-term resource plan. The SCSBA believes that in the context of a growing South Carolina QF market, these issues cannot be adequately addressed as secondary matters within a proceeding intended to set an annual fuel cost rider.

Q. How might a solar integration study impact issues being considered in this proceeding?

A. As authorized by H.3659, a solar integration study administered by this Commission would provide valuable insight into the opportunities and limitations around adding more solar to SCE&G's system by "evaluat[ing] what is required for electrical utilities to integrate increased levels of renewable energy and emerging energy technologies while maintaining economic, reliable, and safe operation of the electricity grid in a manner consistent with the public good."[8] The SCSBA believes an independent, comprehensive study of this type should be a prerequisite for quantifying the integration costs and benefits that accompany solar at varying penetration levels.

A recent analysis conducted by the consulting firm E3 in partnership with Tampa Electric Company (TECO), *Investigating the Economic Value of Flexible Solar Plant Operation*, provides a compelling example of why an inclusive integration study is so vital when identifying best practices for integrating solar at higher penetration levels.[9] The TECO system is similar in scale to SCE&G, with a system peak between 4 and 5 GW. The study found that the TECO system could balance supply and demand without operating challenges with up 14% of annual energy production coming from must-take solar resources.[10] This is well above the amount of solar currently projected to be interconnected to SCE&G's system, which SCE&G claims will require substantial additional costs to integrate. The TECO study also outlines a variety of alternatives to

[8] H.3659 at Section 58-37-60(A).
[9] *Investigating the Economic Value of Flexible Solar Plant Operation*, Energy and Environmental Economics, Inc. (2018).
[10] *Id.* at 26.

standard utility curtailment protocols for addressing heightened levels of solar energy production, like downward dispatch of solar facilities, all of which provided added value to the utility system and its customers. The SCSBA believes these more "flexible" approaches to solar deployment should be studied by this Commission in advance of approving costly integration fees that are not supported by a comprehensive solar integration analysis.

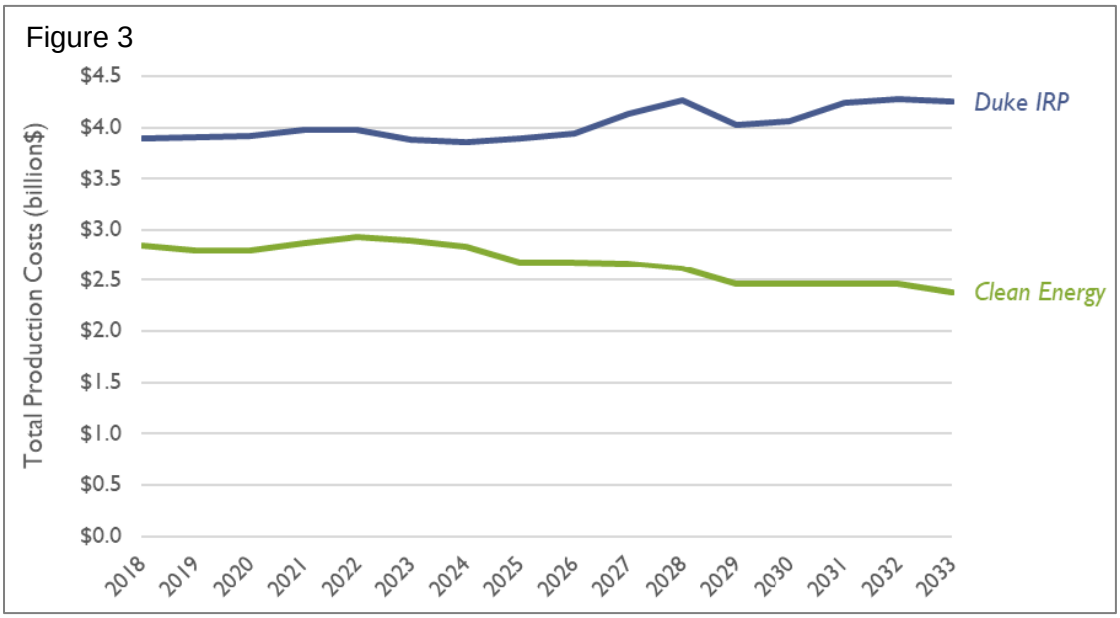
Q. Why would updating SCE&G's IRP have implications for avoided cost calculations?

A. Assumptions made about load growth, energy and capacity needs, emerging technologies, regulatory risks, fuel prices, technology costs, and a litany of other factors appropriately considered in a robust integrated resource planning process have extensive impacts on the base case assumptions used in avoided cost calculations. A common theme amongst the merger settlement, H.3659, and the South Carolina State Energy Plan[11] is a need for utilities to consider a range of portfolio options and conduct various scenario and sensitivity analyses in order to advance a robust resource plan that is in the best interest of customers. For example, an alternative Duke Energy IRP analysis conducted by Synapse Energy Economics, Inc. on behalf of the SCSBA revealed that elevated levels of solar, storage, demand side management, and energy efficiency would significantly reduce costs to ratepayers while maintaining system reliability.[12] Synapse used the EnCompass capacity expansion and production cost model to perform a rigorous analysis of two different scenarios in the Duke Energy service territories from 2018 to

[11] *Energy in Action*, South Carolina State Energy Plan: IRP Guidelines, South Carolina Office of Regulatory Staff Energy Office (2016).
[12] *Modeling Clean Energy for South Carolina: An Alternative to Duke's Integrated Resource Plan*, Synapse Energy Economics, Inc. Docket Nos. 2018-8-E and 2018-10-E, *Comments of South Carolina Solar Business Alliance* (Jan. 31, 2019), Exhibit THD-4.

2033, with one scenario based on Duke's latest IRP, and the other "Clean Energy Scenario" reflecting an optimized view with up-to-date renewable costs and relaxed operational assumptions. In the Clean Energy Scenario, gas and coal resources drop to 32 percent of capacity by 2033 and renewable energy resources grow to 49 percent – while annual production costs fall considerably, largely due to uneconomic coal capacity no longer being forced to generate (see Figure 3).

Figure 3



(*Modeling Clean Energy for South Carolina: An Alternative to Duke's Integrated Resource Plan*, Figure 3)

Q. Would SCE&G's 2019 IRP satisfy the requirements of H.3659 or future IRP requirements within the merge r settlement?

A. No. For example, H.3659 requires that a utility IRP must include "several resource portfolios developed with the purpose of fairly evaluating the range of demand-side, supply-side, storage, and other technologies and services available to meet the utility's service obligations. Such portfolios and evaluations must include an evaluation of low, medium, and high cases for the adoption of renewable energy and cogeneration,

energy efficiency, and demand response measures[.]" The 2019 SCE&G IRP would not meet this requirement. Likewise, SCE&G's 2019 IRP would not meet the conditions of the merger settlement applicable to its 2020, 2021 and 2022 IRPs, which includes resource portfolio requirements similar to those found in H.3659, and also requires Dominion to fund an outside consultant to audit and review the IRPs filed by SCE&G.

To the extent that SCE&G is relying on a suboptimal IRP for calculating avoided cost rates in this docket, those calculations will not accurately reflect the value of solar to an SCE&G system that should be optimized for maximum benefit to its customers.

VI. CONCLUSION

Q. In SCSBA's view, how should the Commission rule on SCE&G's proposals?

A. Based on the concerns about SCE&G's proposed VIC discussed in my testimony, SCSBA respectfully submits that the proposed VIC is not fair, reasonable, or prudent, and that the Commission should reject it entirely. If the Commission is not prepared to reject the VIC outright, it should instead defer consideration of SCE&G's proposal until a later proceeding, or a later phase of this docket. At the very least, the Commission should (a) disallow assessment of Variable Integration Charges on any QF project that has contracted under current or previous PR-2 (or PR-1) rates; and (b) require that any VIC imposed on QFs contracting under newly-approved PR-2 tariffs be based only on costs that will actually result from the integration of that project (or others likely to contract under contemporaneous rate schedules), rather than projects projected by the Company to go online years into the future.

SCSBA further submits that the Commission should reject SCE&G's proposed avoided cost rates, or at least defer consideration of any revision to PR-2 rates until the developments discussed above (e.g. H.3569, the submittal of a new solar + storage rate) have resolved.

Q. Does this conclude your testimony?

A. Yes.